

WHAT IS CLAIMED IS:

1. An isolated nucleic acid molecule which comprises (a) a DNA molecule encoding a Bolekine polypeptide comprising the sequence of amino acid residues from about 1 or about 34 to about 111 of Figure 2 (SEQ ID NO:2), or (b) the complement of the DNA molecule of Bolekine (a).

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2. The isolated nucleic acid molecule of Claim 1 comprising the sequence of nucleotide positions from about 167 or about 269 to about 499 of Figure 1 (SEQ ID NO:1).

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3. The isolated nucleic acid molecule of Claim 1 comprising the nucleotide sequence of Figure 1 (SEQ ID NO:1).

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4. The isolated nucleic acid molecule of Claim 1 comprising the full-length polypeptide coding sequence of the human protein cDNA deposited with the ATCC on October 31, 1997 under ATCC Deposit No. 209424 (DNA39523-1192).

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5. An isolated nucleic acid molecule comprising DNA which comprises (a) a DNA molecule encoding the same mature polypeptide encoded by the human protein cDNA deposited with the ATCC on October 31, 1997 under ATCC Deposit No. 209424 (DNA39523-1192), or (b) the complement of the DNA molecule of (a).

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6. A nucleic acid molecule deposited with the ATCC under accession number 209424 (DNA39523-1192).

7. An isolated nucleic acid molecule encoding a Bolekine polypeptide comprising DNA that hybridizes to the complement of the nucleic acid sequence that encodes amino acids 1 or about 34 to about 111 of Figure 2 (SEQ ID NO:2).

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8. The isolated nucleic acid molecule of Claim 7, wherein the nucleic acid that encodes amino acids 1 or about 34 to about 111 of Figure 2 (SEQ ID NO:2) comprises nucleotides 167 or about 269 to about 499 of Figure 1 (SEQ ID NO:1).

9. The isolated nucleic acid molecule of Claim 7, wherein the hybridization occurs under stringent hybridization and wash conditions.

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10. A vector comprising the nucleic acid molecule of Claim 1 .

11. The vector of Claim 10, wherein said nucleic acid molecule is operably linked to control

sequences recognized by a host cell transformed with the vector.

12. A host cell comprising the vector of Claim 10.

13. The host cell of Claim 12, wherein said cell is a CHO cell, an *E. coli*. bacterium, or a yeast cell.

14. A process for producing a Bolekine polypeptide comprising culturing the host cell of Claim 12 under conditions suitable for expression of said Bolekine polypeptide and recovering said Bolekine polypeptide from the cell culture.

15. The isolated Bolekine polypeptide comprising amino acid residues 1 or about 34 to about 111 of Figure 2 (SEQ ID NO:2).

16. The isolated Bolekine polypeptide which is encoded by the cDNA insert of the vector deposited with the ATCC on October 31, 1997 as ATCC Deposit No. 209424 (DNA39523-1192).

17. An isolated Bolekine polypeptide comprising the sequence of amino acid residues from 1 or about 34 to about 111 of Figure 2 (SEQ ID NO:2), or a fragment thereof sufficient to provide a binding site for an anti-Bolekine antibody.

18. An isolated polypeptide produced by (i) hybridizing a test DNA molecule under stringent conditions with (a) a DNA molecule encoding a Bolekine polypeptide comprising the sequence of amino acid residues from 1 or about 34 to about 111 of Figure 2 (SEQ ID NO:2), or (b) the complement of the DNA molecule of (a), (ii) culturing a host cell comprising said test DNA molecule under conditions suitable for the expression of said polypeptide, and (iii) recovering said polypeptide from the cell culture.

19. A chimeric molecule comprising a Bolekine polypeptide fused to a heterologous amino acid sequence.

20. The chimeric molecule of Claim 19, wherein said heterologous amino acid sequence is an epitope tag sequence.

21. The chimeric molecule of Claim 19, wherein said heterologous amino acid sequence is a Fc region of an immunoglobulin.

22. An antibody which specifically binds to a Bolekine polypeptide.

23. The antibody of Claim 22, wherein said antibody is a monoclonal antibody.

24. The antibody of Claim 22 wherein said antibody is a humanized antibody or an antibody fragment.

5 25. An agonist to a Bolekine polypeptide.

26. An antagonist to a Bolekine polypeptide.

10 27. A composition of matter comprising (a) a Bolekine polypeptide, (b) an agonist to a Bolekine polypeptide, (c) an antagonist to a Bolekine polypeptide, or (d) an anti-Bolekine antibody, in admixture with a pharmaceutically acceptable carrier.

15 28. The composition of matter of Claim 27, which is useful for the treatment of an immune related disease in a mammal.

29. The composition of matter of Claim 27, wherein (a), (b), (c) or (d) is capable of (i) enhancing the proliferation of T-lymphocytes in a mammal, or (ii) increasing infiltration of inflammatory cells into a tissue of a mammal.

20 30. The composition of matter of Claim 27 comprising a therapeutically effective amount of (a), (b), (c) or (d).

25 31. An article of manufacture, comprising:
a container;
a label on said container; and
a composition of matter comprising (a) a polypeptide of Claim 17, (b) an agonist of said polypeptide, (c) an antagonist of said polypeptide, or (d) an antibody that binds to said polypeptide, contained within said container, wherein label on said container indicates that said composition of matter can be used for treating an immune related disease.

30 32. A method of treating an immune related disorder in a mammal in need thereof comprising administering to said mammal a therapeutically effective amount of (a) a polypeptide of Claim 17, (b) an agonist of said polypeptide, (c) an antagonist of said polypeptide, or (d) an antibody that binds to said polypeptide.

35 33. The method of Claim 32, wherein the immune related disorder is systemic lupus erythematosus, rheumatoid arthritis, osteoarthritis, juvenile chronic arthritis, a spondyloarthropathy, systemic sclerosis, an idiopathic inflammatory myopathy, Sjögren's syndrome, systemic vasculitis, sarcoidosis, autoimmune hemolytic

anemia, autoimmune thrombocytopenia, thyroiditis, diabetes mellitus, immune-mediated renal disease, a demyelinating disease of the central or peripheral nervous system, idiopathic demyelinating polyneuropathy, Guillain-Barré syndrome, a chronic inflammatory demyelinating polyneuropathy, a hepatobiliary disease, infectious or autoimmune chronic active hepatitis, primary biliary cirrhosis, granulomatous hepatitis, sclerosing cholangitis, inflammatory bowel disease, gluten-sensitive enteropathy, Whipple's disease, an autoimmune or immune-mediated skin disease, a bullous skin disease, erythema multiforme, contact dermatitis, psoriasis, an allergic disease, asthma, allergic rhinitis, atopic dermatitis, food hypersensitivity, urticaria, an immunologic disease of the lung, eosinophilic pneumonias, idiopathic pulmonary fibrosis, hypersensitivity pneumonitis, a transplantation associated disease, graft rejection or graft-versus-host-disease.

34. A method for determining the presence of a Bolekine polypeptide in a sample suspected of containing said polypeptide, said method comprising exposing said sample to an anti-Bolekine antibody and determining binding of said antibody to a component of said sample.

35. A method of diagnosing an immune related disease in a mammal, said method comprising detecting the level of expression of a gene encoding Bolekine polypeptide (a) in a test sample of tissue cells obtained from the mammal, and (b) in a control sample of known normal tissue cells of the same cell type, wherein a higher or lower level of expression of said gene in the test sample as compared to the control sample is indicative of the presence of an immune related disease in the mammal from which the test tissue cells were obtained.

36. A method of diagnosing an immune related disease in a mammal, said method comprising (a) contacting an an anti-Bolekine antibody with a test sample of tissue cells obtained from said mammal and (b) detecting the formation of a complex between the antibody and the polypeptide in the test sample, wherein formation of said complex is indicative of the presence of an immune related disease in the mammal from which the test tissue cells were obtained.

37. A method of identifying a compound that inhibits the activity of a Bolekine polypeptide, said method comprising contacting cells which normally respond to said polypeptide with (a) said polypeptide and (b) a candidate compound, and determining the lack responsiveness by said cell to (a).

38. A method of identifying a compound that inhibits the expression of a gene encoding a Bolekine polypeptide, said method comprising contacting cells which normally express said polypeptide with a candidate compound, and determining the lack of expression said gene.

39. The method of Claim 38, wherein said candidate compound is an antisense nucleic acid.

40. A method of identifying a compound that mimics the activity of a Bolekine polypeptide, said

method comprising contacting cells which normally respond to said polypeptide with a candidate compound, and determining the responsiveness by said cell to said candidate compound.

41. A method of stimulating the proliferation of T-lymphocytes, said method comprising contacting T-lymphocytes with an effective amount of (a) a Bolekine polypeptide or (b) an agonist of (a), wherein the proliferation of said T-lymphocytes is stimulated.

42. A method of inhibiting the proliferation of T-lymphocytes, said method comprising contacting T-lymphocytes with an effective amount of an antagonist of a Bolekine polypeptide, wherein the proliferation of said T-lymphocytes is inhibited.

43. A method of enhancing the infiltration of inflammatory cells into a tissue of a mammal, said method comprising administering to said tissue an effective amount of (a) Bolekine polypeptide or (b) an agonist of (a), wherein said infiltration is enhanced.

44. The method of Claim 43, wherein said inflammatory cells are mononuclear cells, eosinophils or polymorphonuclear neutrophils (PMNs).

45. A method of inducing the differentiation of puripotent cells into neuronal cells in a mammal, said method comprising administering an effective amount of (a) a Bolekine polypeptide or (b) an antagonist of Bolekine polypeptide, wherein said cells differentiate to a state wherein neuronal markers can be detected.

46. The method of Claim 45, wherein said neuronal marker is MAP2.